EXTECH INSTRUMENTS
A FLIR COMPANY

ISO 9001:2000 CERTIFIED

APEX 2
User Guide

Revision: 1.0
02/03/2009

"Make Mine an Extech!™"

Extech Instruments Corporation• 285 Bear Hill Road • Waltham, MA 02451-1064 USA
Tel: 1-781-890-7440 • Fax: 1-781-890-7864 • E-mail: printers@extech.com • www.extech.com

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Declaration of Conformity

Name	Extech Instruments Corporation
Manufacturer's Address	285 Bear Hill Road, Waltham, MA 02451, USA Telephone: +1 781 890 7440
Declares that the Product	
Product Name:	Portable Receipt Printer
Model Number:	APEX 2
Optionally Containing:	Bluetooth™ radio short range OEM module from connectBlue ab, cB-0701-01; FCC ID PVH 070101. Conforms to R&TTE Directives: 1999/5/EC (EN 300 328-2), EMC Directive 89/336/EEC (EN 301 489-1 and -17); and Low Voltage Directive 73/23/EEC (EN 61131-2)
Conforms to the following regulation and/or standards:	
	FCC: Part 15 Subpart B, Class B
	CE: EN60950 CE: EN55022 Class B; CE: EN61000-3-2; CE: EN61000-3-3 ; CE: EN50024.
Supplementary Information :	• The product complies with EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC • The product conforms to ANSI/UL STD 60950 & Certified to CAN/CSA STD C22.2 No. 60950-00 • CB Certified • ETL Listed, control # 3046813 • The product is IEC 68 certified
Place:	Waltham, MA, USA
Date:	November, 2008
Signature:	*Antony Revis*
	Antony Revis, General Manager

General Precautions

- Before using this product be sure to read through this manual. After reading, please keep the manual in a safe place for future reference.
- The information contained herein is subject to change without notice of any type.
- Extech is not responsible for any operational results regardless of missing information, errors or any misprinting in this manual.
- Extech is not responsible for problems created as a result of using options and consumables not approved by them.
- This product is designed for servicing at an Authorized Service Center. Other than routine maintenance described in this manual the user should not attempt to repair, service or disassemble this product.
- Incorrect operation, handling, improper supplies and operating environments may cause damage or otherwise affect the proper operation of this product. Such actions invalidate the product warranty.

Safety

In this manual, on the Printer, and on the accessories we make use of internationally recognized safety symbols as follows:

	Caution! Refer to the explanation in this Manual
	Caution! Risk of electric shock
	Double Insulation or Reinforced Insulation
	DC, Direct Current or Voltage
	AC+DC, Current or Voltage

1. Getting Started

1.1 Unpacking the Printer

The APEX 2 portable printer is a full-featured portable receipt printer designed for various job environments including field service, field sales, hospitality and restaurants, ticketing and many others where point of service receipts are required. The package contains:

- APEX 2 Printer
- Battery Cartridge
- Universal AC Adaptor (US, UK, European, and Australian plugs) for charging the battery inside the printer
- Belt Loop System
- Roll of paper supply (already loaded in the printer)

Both cabled and wireless communication is possible.

Overview

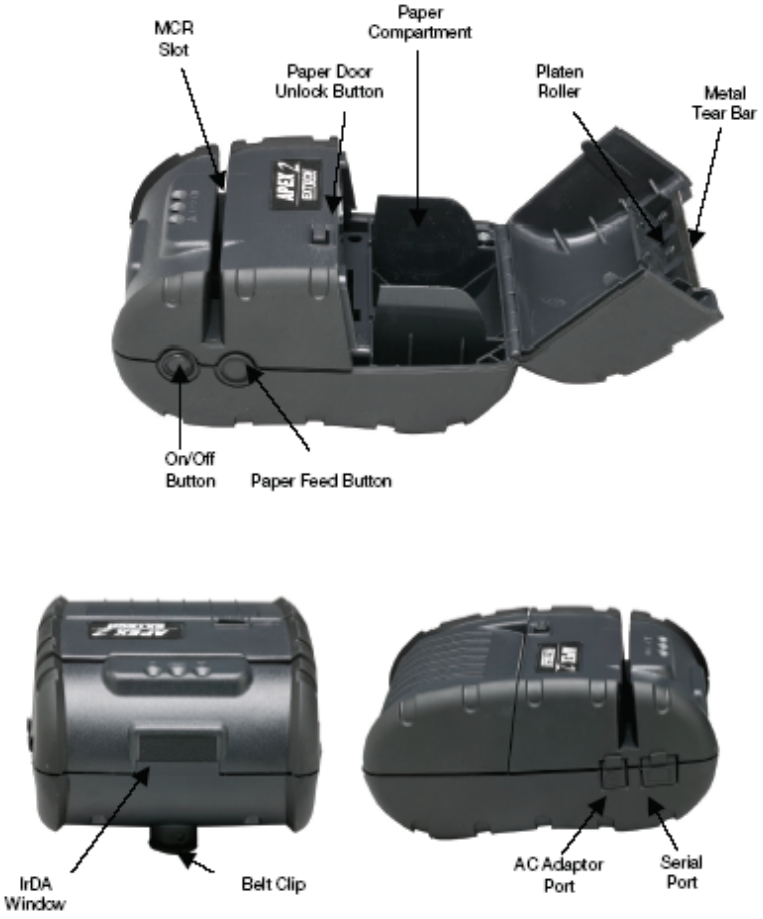

FIGURE 1: PRINTER OVERVIEW

1.2 Installing and Charging the Battery Cartridge

Note: One battery cartridge is included with the printer. Similar to a cordless phone battery, the printer's battery must be charged before use.

	Extech batteries must be cycled several times to achieve maximum capacity. To cycle a battery, fully charge it and then allow a full discharge through normal use.

1.2.1: Installing the Battery

Note: Refer to the illustration below to install the battery pack in the printer.

- Unlock the battery door by sliding the locking tab down.
- Open the battery door to an angle of approx. 90 degrees. Do not force open.
- Insert the battery as shown. (Non-contact side first, letting the contact end drop into place).
- Close and lock the battery door by sliding the locking tab up.

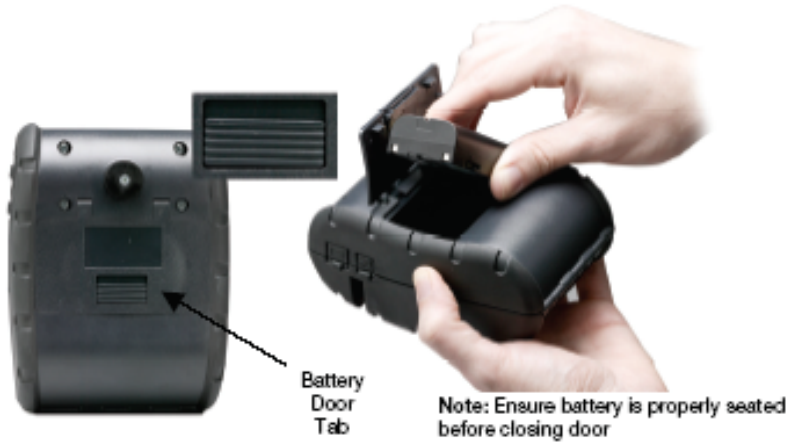

FIGURE 2: INSTALLING THE BATTERY CARTRIDGE

Note: Ensure that the battery side with 2 contact terminals is facing down to make contact with the spring probes inside the battery compartment

1.2.2 Charging the Battery

- Plug the battery charger adaptor output cable into the battery charger connector as shown.
- Plug the battery charger adaptor into the appropriate AC line voltage socket.
- The Yellow/Amber charging LED will illuminate indicating that the battery is charging.
- The battery will be fast charged and after about 180 minutes the LED will turn off.
- To remove the battery cartridge, open the battery door and tip the battery out of the printer.

FIGURE 3: CHARGING THE BATTERY

Note: To ensure a full charge do not operate the printer while charging.

Note: The wall mounted charger is Class II equipment (⧈). Multiple plug configurations comply with most international standards. The wall mounted charger is not supplied with plugs for use in Korea.

- The wall mounted charger has the following specifications:

Model	APEX 2
Input Voltage/Current	100-240 VAC/0.55A
Input Frequency	50-60 Hz
Output Voltage/Current (⎓)	10VDC/2.4A

⚠	**Do not use a charger not approved by Extech for use with the APEX 2 series. Use of an unapproved charger could damage the battery pack or the printer and will void the warranty.**
⚠	**The battery terminals are well recessed inside the printer. Do not allow them to contact conductive material since this may create a short circuit which could cause injury or start a fire.**
⚠	**When using the wall mounted charger ensure the socket outlet is close to the printer and easily accessible during the battery recharging process. Either switch the socket off (if supplied with a socket switch) or pull out the charger from the socket or disconnect the plug from the printer in the event of any problems.**

1.3 Reading the LED Status

The illustration below points out the location of the LED indicators described in Table 1

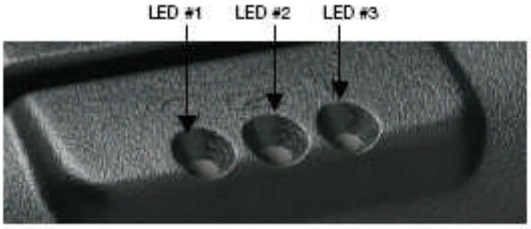

FIGURE 4: LED INDICATOR LOCATIONS

Table 1, below, details the LED indicator status. Refer to Figure 1 to locate the <ON/OFF> and <FEED> push button switches and the AC adaptor socket. Figure 4 provides the location of the status LEDs on the front of the printer.

Table 1 - Reading the LED Status

LED	Status	Condition	Function
LED # 1 Communication	GREEN	Flashing	Power is ON and the printer is in RS232 or IRDA mode
		Steady	Communicating with host
	BLUE	Flashing	Power is ON and the printer is in Bluetooth mode
		Steady	Transmitting/receiving
	AMBER	Flashing	Power is ON and the printer is in 802.11b/g mode
		Steady	Transmitting/Receiving
	RED	Steady	Low power indication
LED # 2 Battery	AMBER	Steady	Battery being charged. The LED will turn off when the battery is fully charged
LED # 3 Magnetic Card Reader & Printer Error	GREEN	Steady	▪ Indicates that MCR is ready to accept data ▪ Indicates that SCR is ready to accept data
	RED	Steady	▪ Printer Error. The printer is out-of-paper or Paper door is open. ▪ MCR/SCR faulty condition
		Flashing	Indicates the print head is hot and printing is paused

Note: Refer to the troubleshooting guide to determine error or fault condition.

1.4 Attaching Belt Loop System

The belt loop system consists of two parts:

- A knob located on the back part of the printer just above the battery door
- A strap with a click-on connector

To attach the strap, insert the knob located at the bottom of the printer into the slot of the connector. Pull down until a click is heard; the printer is now secure. Place the loop over your belt and allow the printer to hang from the left or right hip.

- To release the printer, press inward on the two connector latches and pull the knob clear of the slot.

Note: Do not force or pull the printer from the connector without pressing inward on the two latches

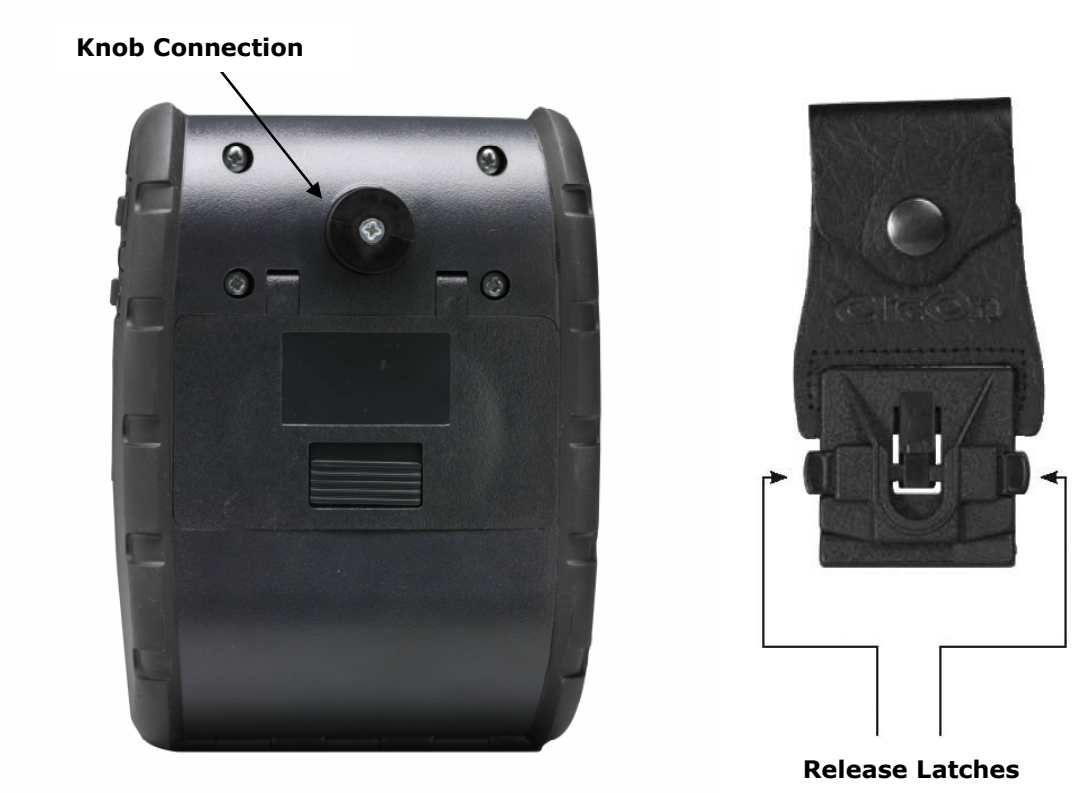

FIGURE 5: KNOB CONNECTION AND QUICK CLIP

2. Loading Supplies

2.1 Adding Paper/Labels

The printer can print text, bar codes and graphics on thermal receipt paper. See "Supply Specifications" in Section 5.2 for the width, thickness requirements and approved vendors. Follow these steps to load printer paper.

- Press the Paper Door Release button; the door will open slightly. Open the door the rest of the way (as shown in Figure 6).
- Grip either side of the paper door and open – it will open 180 degrees.

Note: The Paper Door Release button must be depressed when opening and closing the paper door.

FIGURE 6: OPENING PAPER DOOR

Note: The Paper Door Release button must be depressed when opening/closing the paper door

- Place the paper roll into the paper supply compartment. Ensure that the paper supply unwinds from the bottom (as indicated below) with the thermal side closest to the print head.
- Unroll about 3 inches of paper from the roll and position it between the print head guides.

Note: Pull Paper Roll Leader out of printer. Note direction of paper travel.

FIGURE 7: INSTALLING PAPER ROLL

Note: Pull the Paper Roll Leader Out of the Printer. Note the direction of paper travel

- While pressing the Paper Door Release button, close the paper door.
- Release the Paper Door Release button and press the printer door until fully closed
- Turn the printer ON by pressing the Power button and test the paper advance function by pressing the Paper Feed Button. Verify that the paper advances correctly.

Note: Paper Supply Roll
To prevent possible damage to the print mechanism, it is important to verify that the paper has not been fastened to the inside core in any way. The paper should be wound on the core in such a way that the end of the paper will unwind freely from the core. If fastened by tape or glue, the core will be pulled into the mechanism causing jamming and possible gear damage. Proper paper roll supplies are available from Extech as P/N 757060.

2.2 Tearing Paper

The printer's paper door acts as a tear bar. Pull one edge of the paper against the tear bar as indicated. Then tear down and across against the tear bar to tear the paper. See Figure 8 for details.

Note: Pulling paper up and/or sideways without using the tear bar can cause a paper jam due to paper misalignment in print head mechanism.

FIGURE 8: TEARING PAPER

The tear bar may have sharp edges!

*Note: Using the tear bar is the **only** way to tear the paper.*

Note: Pulling up and pulling sideways without using the tear bar can cause a paper jam due to paper misalignment in the print head mechanism

3. Using the Printer

3.1 Initial Power up and self-test

Once the battery is charged and the paper is loaded an initial power up self-test can be performed.

- Press the <ON/OFF> switch once. This turns printer on. The Green LED illuminates
  - *After approximately 20 seconds, if no instructions are sent to the printer, the printer will automatically turn off to conserve battery life.*
  - *If the printer is set for Bluetooth communications (BT) mode the printer will stay on all the time.*
- Press the <ON/OFF> switch to turn the printer off. The green LED turns off.
- To start the self-test, press and hold the <FEED> switch then press the <ON/OFF> switch
- The printer will start printing the self-test messages. Release the <FEED> and <ON/OFF> switches.
  - *Press the* <ON/OFF> *or* <FEED> *switch to stop or cancel the self-test print.*
  - *The first few lines of self-test show the printer firmware version, the current printer settings (for example, BT or Serial mode) and a list of any optional or special features installed.*

FIGURE 9: SELF TEST

3.2 Connecting the Printer

- The APEX 2 printer supports Serial RS232 and Bluetooth ™ as default configuration. IrDA or 802.11g communication is also available as an optional feature.
- Serial, IrDA and Bluetooth communication settings can be changed via a DIP switch located on the control card.
- The DIP switch is located inside the battery compartment. The illustration below indicates the location of this switch. Figure 10 shows the DIP switch selection.
- The functions assigned to these switches are shown **Table 2.**
- If the Serial interface is selected, the communication parameters, Baud Rate, Data Bit and Parity, must be set.

Note: Optional serial cable is available for Serial RS232 communication (part # 5892RJD9-1).

- Printer drivers for Windows™ 95/98/NT/2000/XP and Vista are available from Extech.
- PrinterCE™ print Control utility is available from Extech for Windows CE devices.
- Printboy™ Print Utility from Bachmann Software™ or PalmPrint Utility™, from StevensCreek™, are recommended for Palm Pilot devices.

3.2.1 Location of Dip Switches

- The DIP switches are located inside the battery compartment. Figure 10 shows the DIP switch location.
- The functions assigned to these switches are shown in Table 2.
- If the Serial interface is selected, the communication parameters, Baud Rate, Data Bit and Parity, must be set.

3.2.2 Setting Dip Switches

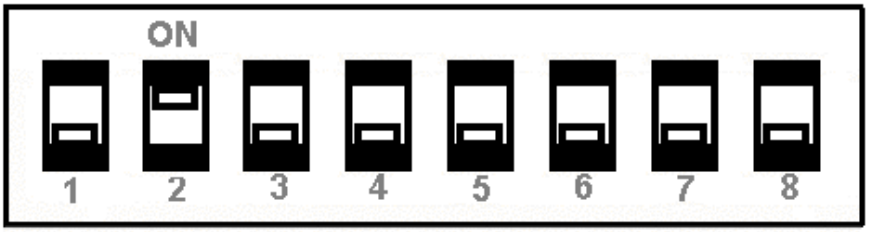

FIGURE 10: DIP SWITCH SETTINGS (SHOWING SETTING FOR BT)

Note: Use caution when changing dip switch settings. Carefully use a pointer on the dip switch to toggle its position. DO NOT use a screw driver and do not apply excessive force.

3.2.3 Dip Switch Functions

Table 2 shows the available dip switch settings.

Table 2 – DIP Switch Setting

Dip Switch	Function	Switch #	Switch #	Switch #	Notes
1 & 2	Communication Interface	SW 1	SW 2		
	RS232	OFF	OFF		Baud rate set by Dip switches 3,4 and 5
	IrDA	ON	OFF		Baud Rate can be negotiated up to the value specified through Dip switches 3,4 and 5
	Bluetooth	OFF	ON		
	802.11g	OFF	ON		
3 & 4 & 5	Baud Rate	SW 3	SW 4	SW 5	
	115200	OFF	OFF	OFF	
	57600	ON	OFF	OFF	
	38400	OFF	ON	OFF	
	19200	ON	ON	OFF	
	14400	OFF	OFF	ON	
	9600	ON	OFF	ON	Use for fixed IrDA
	2400	OFF	ON	ON	
	1200	ON	ON	ON	
6	Parity Bit	SW 6			
	Parity Enabled	ON			Does not apply for IrDA
	Parity Disabled	OFF			Does not apply for IrDA
7	Odd/Even	SW 7			
	Even Parity Checker	ON			Does not apply for IrDA
	Odd Parity Checker	OFF			Does not apply for IrDA
8	Auto Power Save	SW 8			
	Power Save Disabled	OFF			Manual On/Off
	Power Save Enabled	ON			Auto Power Down

Note: In order for changes to the dip switch configuration to take effect, the printer power must be reset. This action occurs automatically when the battery is removed to gain access to the dip switches. Please refer to the Developer's Manual for more information

3.3 Serial Communication

- The RS232C Interface signals for the APEX 2 Series printers are terminated on a 6 PIN RJ type data connector located on the side of the printer.
- Six connections are provided from the Serial Interface to the host computer. Table 3, below, lists the Serial Interface signals and pin outs on the RJ connector. The connector pin locations are shown in Figure 11.
- A minimum of two pin connections are required for operation, RXD – pin 3 and Common – pin 1.

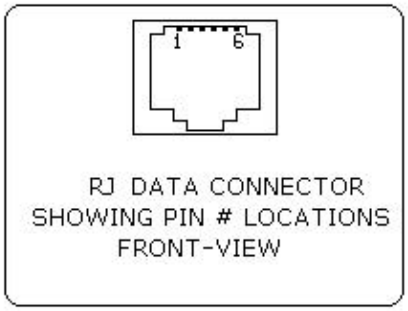

FIGURE 11: RJ DATA CONNECTOR

Table 3 – APEX 2 Serial RS232C Interface signals

RJ25 CONNECTOR PIN #	FUNCTIONAL DESCRIPTION	SIGNAL NAME
3	RS232 from Host (INPUT)	RXD
2	RS232 from Printer (OUTPUT)	TXD
6	Request to send from Host (INPUT)	RTS
4	Clear to send from Printer (OUTPUT)	CTS
1, 5	Logic common	COM

- Dip Switch #1 and #2 must be in the <OFF> position to activate the serial communication interface

Note: The communication parameters: Baud rate, Data Bit and Parity settings must match those of the host device. Dip switch #1 must be in the OFF position.

3.4 Infrared Communications (IrDA)

- Dip Switch #1 must be in the <ON> position and Dip Switch #2 must be in the <OFF> position.
- The printer can be powered ON by pressing the power <ON/OFF> switch.
- If no IrDA connection is made, the printer will automatically power down to a lower power level to conserve battery life. It will remain in a "sleep" mode until an IrDA connection is made, at which time the printer will "wake" and print the requested data.
- Pressing the power switch again will turn the printer <OFF>.

3.5 Bluetooth and 802.11g Communications

- Bluetooth and 802.11g operation:
  - Dip Switch #1 must be in the <OFF> position.
  - Dip Switch #2 must be in the <ON> position.

Note: Adjust baud rate settings to match those of the BT or 802.11b module in your computing device.

- The printer can be powered ON by pressing the power <ON/OFF> switch.
- Pressing the power <ON/OFF> switch again will turn the printer <OFF>.

Note: It is necessary for the mobile computing device you are using to discover the printer. Refer to the instructions provided by the systems integrator.

Note: Systems Integrators: Refer to the Bluetooth manual provided with your mobile computer and the Bluetooth section of the Developer's Manual available for this printer.

3.6 Magnetic Strip Reader

- The Magnetic Card Reader is a factory-installed option. This option requires special application software to read and process cards with a magnetic strip, such as credit cards or driver's licenses

Note: Refer to Figure 1 for location of optional magnetic strip reader.

- Quickly swipe the card through the reader either left to right or right to left. The magnetic strip must be facing the paper supply door as indicated below while it is passed through the reader.

- Refer to Table 4 for the description of the Magnetic Card LED Status.

Table 4 - Magnetic Card LED Indicator

LED indicator	State	Status
Green	ON	Ready/waiting for card to be swiped.
	OFF	Good swipe - Card data read OR Card not ready to be swiped.
Red	ON	Error reading card's data.

3.7 Programming Information

For programming information, please refer to the Developer's Manual.

Note: System Developers: Please refer to the APEX 2 developer's manual for further details. Other features may be available as described in the programmer's manual

4. Printer Maintenance

4.1 Print Head Cleaning Instructions

The print head and platen roller may need cleaning after printing a number of rolls of paper, when new supplies are loaded, or when voids in the printout are apparent.

Do not use sharp objects to clean the print head. This may damage the printer and require service or repair

- Open the paper door by pressing the Paper Door Release Button as shown in Figure 6. The paper supply door will pop up.
- Remove the paper roll.
- Moisten a cotton swab with isopropyl alcohol and clean the print head.
- Clean the platen roller with a dry cloth or small brush.

Note: Another cotton swab moistened with isopropyl alcohol may be used to clean the platen. Turn the platen roller with your finger and run the cotton swab or dry cloth across it. Ensure that the platen roller is clean all the way around.

- Moisten another cotton swab with isopropyl alcohol. Rub the swab across the black mark sensor to remove build-up
- Moisten another cotton swab and rub the swab across the tear bar to remove build-up

Note: Dust build-up may occur depending on the environment and the quality of the paper supply used. If this occurs, use a can of compressed air to blow dust and paper debris out of the printer.

4.2 Charging the Printer Battery

The printer battery is charged using the wall mount adapter provided. Follow these steps to charge the battery pack.

- Plug the battery charger adaptor output cable into the battery charger connector as shown in Figure 3.
- Plug the battery charger adaptor into the appropriate AC line voltage socket.
- The Yellow/Amber charging LED will illuminate indicating that the battery is charging.
- The battery will be fast charged and, after approximately 180 minutes, the LED will turn off.
- To remove the battery cartridge, open the battery door and tip the battery out of the printer.

4.2.1 Important Notes on Charging Batteries

- The model APEX 2 printers require an adaptor output of 10VDC/1.32A.
- The battery fast-charge is initiated each time the power adapter is connected to the printer.
- The fast-charge controller checks the battery's voltage and temperature before the start of the fast recharge process. If the battery voltage or the temperature exceeds the fast-charge limits, the charger defaults to trickle charge at C/10 or 70mA rate.
- Optional external battery chargers are available for Extech batteries. Refer to Section 4.7 "Printer Supplies" for detailed information.

4.2.2 Important Notes on Replacing Batteries

- Check for the correct Extech battery part number and use only that part for the new battery.

	Risk of explosion if battery is replaced by an incorrect type.
	Follow instructions in Section 4.5 to dispose of used batteries.

4.3 Verifying Battery Charge State

It is strongly recommended that the printer be tested before it is returned to Extech. Follow these steps to identify and correct any battery power problem. These steps will help determine if the fault is with the printer or with some other part of the system.

To test the AC adaptor:

- Use a multimeter and measure the output voltage. The output should be 10VDC.

- Press the <ON/OFF> switch and wait until all LEDs are off.
- Insert the AC adaptor plug into the printer. If the amber LED switches on, the battery is not fully charged, however the charge circuit is functioning correctly.
- The AC power portion of the circuit appears OK.

To test the DC power:

- Disconnect the AC Adapter after the battery has been allowed to charge for approx. 5 minutes.
- Press and hold the <FEED> switch, press and release the <ON/OFF> switch and then release the <FEED> switch. The printer will print a "self test" receipt.
- If the self test receipt is printed, the DC power is OK.

To test if the battery is accepting charge:

- Press the <ON/OFF> switch and wait until all LED's are off.
- Plug the AC power adapter into the printer. Press <ON>; the green LED will illuminate and switch off after approx. 20 seconds.
- As long as the amber LED is ON, the battery is accepting a charge and the charging circuit is OK. At the end of a 180 minute charge cycle the LED will switch off.

4.4 Battery and Safety Information

The printer is powered by a 7.4V Li-Ion battery cartridge.

- Charging time for the printer is approximately 3.0 hours.
- Remove the battery from the printer before storing the printer for long periods of time.
- The battery storage temperature is 40°F to 104°F (4°C to 40°C). Do not store a fully charged battery at temperatures greater than 104°F (40°C) for long periods of time – the battery may permanently lose charge capacity.
- The recommended temperature for charging is 68°F (20°C) to 77°F (25°C).
- Be sure to use a fully charged battery before long or battery intensive printing sessions. Certain operations (for example, printing receipts with many bar codes and graphics) drain the battery more quickly than others.
- Dispose of battery according to local regulations. **Do not throw in trash.**

	Do not disassemble, short circuit, heat above 80°C, or incinerate. The battery may explode.

4.5 Recycling Batteries

The Rechargeable Battery Recycling Corporation (RBRC) is a non-profit organization created to promote recycling of rechargeable batteries. For more information on recycling batteries in your area, visit **www.rbrc.org.**

4.6 Trouble Shooting

Problem	Action
Does not feed paper or has a paper jam	•Remove any jammed supply •Reload paper supply
Does not print	•Check or replace the printer's battery •Make sure the paper supply is loaded correctly, not backwards •Verify communication between the host device and the printer by disconnecting the communication cable and performing a printer self test
Light printing	•Check or recharge the battery •Adjust the print contrast through the print application
Voids in printing	•Clean the print head following the cleaning instruction listed in Section 4.1
Red (Error) LED on	•Check that the paper roll is not depleted and that the paper door is closed •Error reading MCR •After extended printing, print head may be hot; printer will pause before resuming printing

If the problem is not identified by following the above trouble shooting guide, contact Extech Technical Support. Support numbers and Email addresses are listed in Section 6 of this manual.

Other than routine cleaning and other maintenance described in Section 4, the printer is not intended to be serviced by the user. It must be returned to an Authorized Service Center. Under no circumstances should the user attempt to dis-assemble the printer

4.7 Printer Supplies

Part Number	Description
78728S1-3	APEX 2, Standard with Class 2 BT
78728S1R-3	APEX 2, Standard with Class 2 BT and MCR
78728S1-2	Apex 2 with 802.11b/g
78728S1R-2	Apex 2 with 802.11b/g and MCR
151133	Optional 12V/24V In-Vehicle Adaptor (Battery in printer)
157261	Multi-Plug Battery Charger Adapter (US, UK, Euro & Australian Plug)
5892RJD9-1	Serial Data Cable – RJ to DB9 PC compatible (Straight Plug)
756983	IP54 Certified Environmental Case
756998-2	Spare Belt Loop System
757060	2500THS Thermal Paper Pack (2.25”/57 mm, 5 rolls per pack)
757060-CASE	Spare Paper (Case of 200 Rolls)
757150	Thermal Print Head Cleaning Pen
757160	Magnetic Card Reader Cleaning Cards (5 per order)
757351	Optional Shoulder Strap with Quick Clip
767400-1	Battery Charger (2 Bay) Li-Ion, 120VAC
767400-2	Battery Charger (2 Bay) Li-Ion, 220VAC
767400-4	Battery Charger (2 Bay) Li-Ion, 240VAC
7A1000014	2500THS Li-Ion Battery Cartridge: 7.4VDC– 2200mA
Available from Extech Email: printers@extech.com	Windows™ 95/98/NT/2000/XP and Vista Drivers
Download: http://www.fieldsoftware.com/PrinterCE.htm	Windows™ CE print Utility
Download http://www.stevenscreek.com/pilot/dodownload.html http://www.bachmannsoftware.com/downloads.html	Palm Pilot print Utility PrintBoy™ for Palm O/S

5 Specifications

5.1 Printer Specifications

Height:	2.7 inches (68mm)
Width:	4.2inches (107mm)
Length:	5.4 inches (138mm)
Weight: w/battery & supply	1 lb (465g)
Shipping weight:	2.8 lbs. (1.31 kg)
Power:	7.4 V Li-Ion battery
Operating Temp. Limits:	14F to 122F (-10 to 50C)
Storage Temp. Limits:	-4F to 140F (-20C to 60C)
Operating Humidity Limits:	20% to 85% non-condensing
Storage Humidity Limits:	5% to 95% non-condensing
Print head:	2.25” wide (57mm); 203 dpi (8 dots per mm)
Printing Method:	Direct Thermal
Print Speed:	Up to 2.0 inches per second
Supported Fonts: (Bitmap)	Standard (normal and bold) Large (normal) Reduced (normal and bold) Large rotated.
Supported Bar Codes:	Codabar, Code 39, UCC/EAN – 128, UPC/EAN/JAN, Interleaved 2 of 5, Code 128 2D: PDF417
Memory:	1MB RAM, 4MB Program Flash
Charging Time:	Approximately 180 minutes
Communications:	RS-232 port, IrDA, BT, 802.11g
Print Ratio:	25% black maximum/sq. in.

5.2 Supply Specifications

Supplies:	Thermal direct receipt paper
Supply Thickness:	2.2 to 3.5 mils (receipt paper)
Supply Width:	2.25 inches (57mm)
Supply Length:	1 roll of receipt paper is approx. 600 inches (15,240 mm)
Supply Sensing:	Black mark (on face of supply)
Paper roll diameter:	Outside: 1.5 inches (37.5 mm) Inside: 0.4 inches (10 mm)
Maximum Print Area:	1.89 inches (48 mm) X 5.3 inches (203mm)
Approved Vendors:	**Kansaki**: P300, P310, P350, P354, P390, P394, P530UV, TO281CA, OP200, TO381N **Jujo**: TF-50KS-E2C **Honshu**: FH65BV-3

5.3 Regulatory Notes

5.3.1 FCC Part 15 Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

For Bluetooth equipped printers, please note:

- The printer contains an OEM Serial Port Adapter from connectBlue with FCC ID: PVH070101. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

5.3.2 Warranty

This printer is warranted by Extech Instruments to be free of defects in parts and workmanship for a period of one year from date of shipment. This warranty does not apply to defects resulting from action of the user such as misuse, improper wiring, operation outside of specification, improper maintenance or repair, or unauthorized modification. Extech specifically disclaims any implied warranties of merchantability or fitness for a specific purpose and will not be liable for any direct, indirect, special, incidental or consequential damages. Extech's total liability is limited to the repair or replacement of the product. The warranty set forth above is inclusive and no other warranty, whether written or oral is expressed or implied.

5.3.3 Warranty and/or Repair Service

A Return Authorization number must be issued before a unit is returned to Extech for repair. Once a unit has been properly returned to Extech (Note: The customer is responsible for ensuring proper packing to prevent damage in transit as well as the shipping costs back to Extech), it will be repaired (estimates are provided first if the repair cost is estimated above $100.00) and returned via UPS ground. The customer may elect a faster mode of transport at their cost.

6. Customer Support

6.1 Online Technical Assistance

Frequently Asked Questions page	http://www.extech.com/printer/techSupport/FAQ.html
Troubleshooting Guide.	http://www.extech.com/printer/techSupport/troubleShootGuide.html

6.2 Technical Support Request

If you need technical assistance regarding software, hardware or operation of Extech printers, please contact us at:

Tech Support Form	http://www.extech.com/printer/techSupport/support.html
Email	printertechsupport@extech.com
Telephone	+1-(781)-890-7440
Fax	+1-(781)-890-7864

Portable Printer Division
http://www.extech.com/Printer

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